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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/729,100 | 12/05/2003 | Brad Calder | BITRAK.001A | 3083 |
| 20995 7590 09/26/2007 KNOBBE MARTENS OLSON & BEAR LLP 2040 MAIN STREET FOURTEENTH FLOOR IRVINE, CA 92614 | | | EXAMINER KANG, INSUN | |
| | | | ART UNIT 2193 | PAPER NUMBER |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

jcartee@kmob.com
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Office Action Summary

Application No.

10/729,100

Applicant(s)

CALDER ET AL.

Examiner

Insun Kang

Art Unit

2193

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 July 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-47 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-47 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date: _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date: _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This action is in response to the amendment filed on 7/9/2007.
2. As per applicant's request, claims 1, 3, 4, 10, 16, 24, 26, 27, 31, 37-41, 43, and 45 have been amended. Claims 1-47 are pending in the application.

Claim Rejections - 35 USC § 112

3. The rejection to claims 1-30, 41, and 42 has been withdrawn due to the amendment to the claims.

Claim Rejections - 35 USC § 101

4. The rejection to claims 37-40 and 45 has been withdrawn due to the amendment to the claims.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1-47 are rejected under 35 U.S.C. 102(e) as being anticipated by Dimpsey et al. (US patent 7,114,150) hereafter Dimpsey.

Per claim 1:

Dimpsey discloses:

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- identifying at least one construct in a program wherein the program is configured for native execution on a first processor (i.e. “a specified location in a routine,” col. 8 lines 33-45; “the hot spot... is identified,” col. 2 lines 58-51; Fig.11);
- and interpreting, via an interpreter (i.e. If the code of the hot spot method is interpreted,” col. 15 lines 52-61),
- the program on a second processor (i.e. “execution of a hook,” col. 8 lines 33-45; Fig.1, 2A),
- wherein during the interpretation, analysis code is invoked by the interpreter at the identified constructs (i.e. “if the code of the hot spot method is interpreted, the byte codes...may be changed to insert the necessary instrumentation...a hook, to a method that identifies the caller of the hot spot,” col. 15 lines 62-67)
- wherein the analysis code includes machine instructions for execution directly on the second processor (i.e. “Hooks may be inserted...dynamically ...through modification of a loaded executable,” col. 10 lines 17-25)
- and wherein the analysis code and the interpreter communicate via a predefined interface (i.e. “a JVM interface,” col. 18 lines 4-15; “JVMPI,” col. 2 lines 13-17).

Per claim 2:

Dimpsey further discloses:

- wherein the construct is selected from the group comprising: a basic block, an instruction, a group of instructions, and a procedure (i.e. “a specified location in a routine,” col. 8 lines 33-45; “the hot spot... is identified,” col. 2 lines 58-51).

Per claim 3:

Dimpsey further discloses:

- during the identification of a construct, a trigger is created and information about the trigger is stored in a file for usage by the interpreter (i.e. “stores the trace data buffer...stored in a file for post-processing,” col. 8 lines 35-45; col. 9 lines 28-54).

Per claim 4:

Dimpsey further discloses:

- wherein during the identification of a construct, a trigger is created and information about the trigger is stored in the program (i.e. col. 9 lines 28-54).

Per claim 5:

Dimpsey further discloses:

- wherein the predefined interface includes a registration procedure for the analysis code to register with the interpreter (i.e. col. 15 lines 52-61).

Per claim 6:

Dimpsey further discloses:

- wherein invoking the analysis code consists of providing to the analysis code at least one item selected from the group comprising: a null statement, a register value, a

memory value, a program counter address, branch instructions, and an effective address (i.e. col. 16 lines 12-20; col. 15 lines 29-41 and 52-61).

Per claim 7:

Dimpsey further discloses:

- registering the analysis code with the interpreter via a predefined application programming interface (i.e. “a JVM interface,” col. 18 lines 4-15; “JVMPI,” col. 2 lines 13-17).

Per claim 8:

Dimpsey further discloses:

- wherein interpretation comprises emulation (i.e. JVM, col. 15 lines 52-61).

Per claim 9:

Dimpsey further discloses:

- wherein interpretation comprises simulation (i.e. “Hardware performance tools,” col. 1 lines 28-30).

Per claim 10:

Dimpsey discloses:

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- storing a compiled analysis binary program, wherein the analysis binary program includes machine instructions from a first machine instruction set (i.e. “stores the trace data buffer,” col. 8 lines 35-45; col. 9 lines 28-54).
- wherein the analysis binary program is configured to analyze or trace state information of an interpretable program; and interpreting via an interpreter, the interpretable program for execution on a processor (i.e. “if the code of the hot spot method is interpreted, the byte codes...may be changed to insert the necessary instrumentation...a hook, to a method that identifies the caller of the hot spot,” col. 15 lines 62-67)
- wherein the interpretable program includes machine instructions from a second machine instruction set, wherein the processor is configured to execute machine instructions from the first machine instruction set, and wherein during the interpreting, upon encountering a selected construct in the interpretable program(i.e. “Hooks may be inserted...dynamically ...through modification of a loaded executable,” col. 10 lines 17-25)
- the analysis binary program is invoked by the interpreter and is provided at least one item of state information about the execution of the interpretable program (i.e. “The execution of the hooks ...to get an understanding of the caller method’s characteristics,” col. 2 lines 48-55).

Per claim 11:

Dimpsey further discloses:

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- the state information includes register values, parameter values, instruction addresses, or data addresses (I.e. col. 7 lines 54-60; col. 8 lines 39-50).

Per claim 12:

Dimpsey further discloses:

- wherein the second machine instruction set includes generic machine instructions that are configured to be emulated on heterogeneous hardware platforms (i.e. Java instruction...intermediate values...for a variety of platform architectures,” col. 7, lines 63-67).

Per claim 13:

Dimpsey further discloses:

- wherein the construct comprises a procedure (i.e. “a routine,” col. 8 lines 35-45).

Per claim 14:

Dimpsey further discloses:

- wherein the construct comprises an instruction (i.e. “a program,” col. 8 lines 35-45).

Per claim 15:

Dimpsey further discloses:

- wherein the interpretable program is a binary program configured for direct execution on a second processor (i.e. col. 7, lines 40-44).

Per claim 16:

Dimpsey further discloses:

- storing location information about the selected construct in a file; and using the file during the interpretation so as to identify the selected constructs (i.e. “ hash tables may be employed to maintain names associated the records in the trace file...an identifier or a key...into a value for the location of the corresponding data in the table,” col. 9 lines 28-54).

Per claim 17:

Dimpsey further discloses:

- inserting a trigger instruction proximate to the selected construct, and wherein an interpreter is configured to recognize the trigger instruction as an instruction to invoke the analysis binary program(i.e. “if the code of the hot spot method is interpreted, the byte codes...may be changed to insert the necessary instrumentation...a hook, to a method that identifies the caller of the hot spot,” col. 15 lines 62-67).

Per claim 18:

Dimpsey further discloses:

- wherein the inserted trigger instruction is a machine instruction from the second machine instruction set (col. 15 lines 62-67).

Per claim 19:

Dimpsey further discloses:

- wherein the inserted trigger instruction is a machine instruction that does not substantially affect the performance of the interpretable program (i.e. the dynamic instrumentation of code...to minimize system perturbation during tracing of the execution,” col. 2 lines 36-47).

Per claim 20:

Dimpsey further discloses:

- wherein the inserted trigger instruction is a no-op machine instruction (i.e. “dynamically inserted hooks,” col. 16 lines 12-20).

Per claims 21 and 22, they are another method versions of claims 8 and 9, respectively, and are rejected for the same reasons set forth in connection with the rejection of claims 8 and 9 above.

Per claim 23:

Dimpsey further discloses:

- additionally comprising ignoring selected machine interactions in the interpretable program (i.e. col. 16 lines 21-30).

Per claim 24:

This claim is another version of the claimed method discussed in claim 10, wherein all claim limitations also have been addressed and/or covered in cited areas as set forth the above.

Dimpsey further discloses a selected condition is processed and the binary code is conditionally invoked (col. 17 lines 12-20).

Per claims 25-30, they are the system versions of claims 12, 16-18, 21, and 22, respectively, and are rejected for the same reasons set forth in connection with the rejection of claims 12, 16-18, 21, and 22 above.

Per claims 31-36, they are another method versions of claims 1-9, respectively, and are rejected for the same reasons set forth in connection with the rejection of claims 1-9 above.

Per claims 37, 39, and 40, they are the interpreter versions of claims 1-9, respectively, and are rejected for the same reasons set forth in connection with the rejection of claims 1-9 above.

Per claim 38:

Dimpsey further discloses:

- a predefined application programming interface that is defined by the interpreter so as to allow the analysis code to register and to define one or more callback routines (i.e. col. 11 lines 37-50).

Per claim 41, it is another method version of claim 17, respectively, and is rejected for the same reasons set forth in connection with the rejection of claim 17 above.

Per claim 42:

Dimpsey further discloses:

- selectively disabling certain of the triggers in the trigger information (i.e. “removal of a hook...turning off the flags,” col. 16 lines 21-30).

Per claim 43:

Dimpsey discloses:

- designating at least one no-op instruction as a trigger in the original code; translating the instructions into native code instructions (i.e. If the code of the hot spot method is interpreted,” col. 15 lines 52-61; “a specified location in a routine,” col. 8 lines 33-45; “the hot spot... is identified,” col. 2 lines 58-51);
- upon triggering the trigger, transmitting state information via a predefined interface, to analysis code (i.e. col. 15 lines 62-67; col. 10 lines 17-25; “a JVM interface,” col. 18 lines 4-15; “JVMPI,” col. 2 lines 13-17).

Per claim 44:

Dimpsey discloses:

- customizing the analysis code for operation with the original code i.e. col. 15 lines 62-67; col. 10 lines 17-25).

Per claim 45:

Dimpsey discloses:

- means for interpreting a binary program, wherein the means for interpreting provides at least one interface for allowing the means for analyzing to identify to the means for interpreting trace information that is to be gathered during the execution of the binary program, and wherein the means for interpreting transmits gathered trace information to the means for analyzing upon encountering a no-op instruction in the binary program (i.e. If the code of the hot spot method is interpreted,” col. 15 lines 52-61; “a specified location in a routine,” col. 8 lines 33-45; “the hot spot... is identified,” col. 2 lines 58-51; “the data collected I the trace buffer is sent to a trace file for post-processing,” col. 9 lines 28-54; col. 15 lines 62-67; col. 10 lines 17-25).

Per claim 46:

Dimpsey discloses:

- identifying at least one trigger location in the binary program; storing the identified trigger location in a file that is separate from the binary program; interpreting the binary program; and invoking analysis code at the identified triggers(i.e. If the code of the hot spot method is interpreted,” col. 15 lines 52-61; “a specified location in a routine,” col. 8 lines 33-45; “the hot spot... is identified,” col. 2 lines 58-51; “the data collected I the trace buffer is sent to a trace file for post-processing,” col. 9 lines 28-54; col. 15 lines 62-67; col. 10 lines 17-25).

Per claim 47:

Dimpsey discloses:

- identifying at least one trigger location in the binary program; storing the identified trigger location in a data section of the binary program interpreting the binary program; and invoking analysis code at the identified triggers (i.e. If the code of the hot spot method is interpreted,” col. 15 lines 52-61; “a specified location in a routine,” col. 8 lines 33-45; “the hot spot... is identified,” col. 2 lines 58-51; “the data collected I the trace buffer is sent to a trace file for post-processing,” col. 9 lines 28-54; col. 15 lines 62-67; col. 10 lines 17-25).

Response to Arguments

7. Applicant's arguments filed on 7/9/2007 have been fully considered but they are not persuasive.

The applicant states that: 1) Dimpsey fails to disclose that the java code itself is natively executable on a separate processor (remark, 10).

In response to the statement 1), the dynamically instrumented binary code is natively executable on a separate processor (i.e. col. 10 lines 17-23).

The applicant states that: 2) Dimpsey does not disclose that the analysis binary program is invoked by the interpreter (remark, 10).

In response to the statement 2), if the code is interpreted, a necessary instrumentation hook is inserted and invoked by the interpreter (i.e. col. 17, lines 28-39).

The applicant states that: 3) Dimpsey does not disclose, “upon encountering a selected construct in the program, a condition is processed and the binary code is conditionally invoked (remark, 11).

In response to the statement 3), In Dimpsey, when a hot spot is detected, a determination is made as to whether the hot spot is native or jitted code, or interpreted code. If it is determined that the hot spot method is native or jitted code, the dynamic instrumentation facility patches a hook into the hot spot method that passes control to a handler routine (col. 17 lines 12-20).

The applicant states that: 4) Dimpsey does not disclose executing the binary program, including the trigger instruction, natively on the second processor (remark, 11).

In response to the statement 4), Dimpsey discloses that the instrumented code may be instrumented such that a flag is set or reset to control the firing of the hook and the dynamically inserted hooks are executed (col. 16 lines 3-20).

The applicant states that: 5) Dimpsey does not disclose adding information to the program that identifies the hooks, thus fails to disclose modifying the program to include trigger information that identifies at least one trigger (remark, 12).

In response to the statement 5), Dimpsey states that a flag is set or reset to control the firing of the hook and the update of the flags are done via native methods by the profiler that dynamically changes the values of the flags as determined by the instrumentation facility. The code for hot spot is identified and dynamically instrumented for an appropriate metric or characteristic (col. 16 lines 3-20). Dimpsey further discloses hash tables to maintain names associated the records in the trace file and an identifier or a key into a value for the location of the corresponding data in the table (col. 9 lines 28-54).

The applicant states that: 6) Dimpsey does not disclose the means for ...analyzing upon encountering a no-op instruction in the binary program (remark, 12).

In response to the statement 6), Dimpsey discloses the instrumentation code that is added to the binary program ("the dynamically inserted hooks are executed," col. 16 lines 3-20).

Therefore, the instrumentation code is a no-op instruction.

The applicant states that: 7) Dimpsey does not disclose storing the hook locations to a file (remark, 12).

In response to the statement 7), Dimpsey discloses a trace file that stores record of execution of a hook that is a specialized piece of code at a specific location in a routine or program (col. 8 lines 35-45). The hook locations are stored in a file.

Conclusion

8. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Insun Kang whose telephone number is 571-272-3724. The examiner can normally be reached on M-F 8:30-5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, MENG AI AN can be reached on 571-272-3756. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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